REVUE SUISSE DE ZOOLOGIE 241
Tome 65, nº 4. — Mai 1958

Five new species of Mites (Acarina: Laelaptidae and Spinturnicidae)

parasitic on bats in the Ethiopian Region, with a key to the species of the genus Periglischrus

by

W. M. TILL

Department of Entomology,
South African Institute for Medical Research, Johannesburg.

(With 15 figures in the text.)

During the last three years collections of mites parasitic on bats have been received from the Ivory Coast, the French Cameroons, and from Zululand. The new species found in this material, and described in the present paper, belong to the genera *Steatonyssus* Kolenati (1858), *Periglischrus* Kolenati (1857), and to a new genus, *Metaspinolaelaps.*

To the collectors of these specimens, D^{r} V. Aellen (Centre suisse de recherches scientifiques en Côte d'Ivoire-Muséum d'Histoire naturelle, Geneva), D^{r} J. Mouchet (Yaoundé), and the Virus Research team of the Rockefeller Foundation and the S.A.I.M.R., I wish to express my thanks for the material sent in for identification.

With the kind permission of the collectors, the holotypes and approximately half the paratypes are retained in the collection of the South African Institute for Medical Research.

Genus Steatonyssus Kolenati, 1858.

Clarke and Yunker (1956) restricted the genus *Steatonyssus* to species having the following characters: dorsal shield of female divided into a large podosomal and large opisthosomal plate; dorsal shield of male entire; sternal plate in female with posterior margin heavily chitinized; three pairs of normally developed sternal setae and one pair of metasternal setae; genital plate tapering to a point and bearing one pair of setae; holoventral shield of male entire; chelicerae and chelae well developed. These species are all parasites of mammals, especially bats.

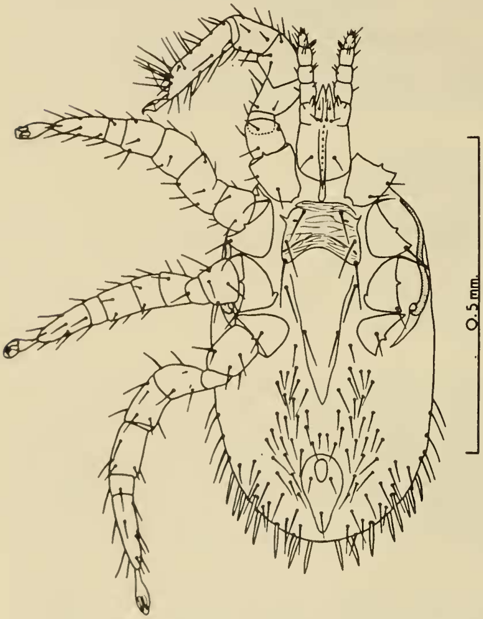

Fig. 1.
Steatonyssus hipposideros n. sp.
Ventral surface of female.

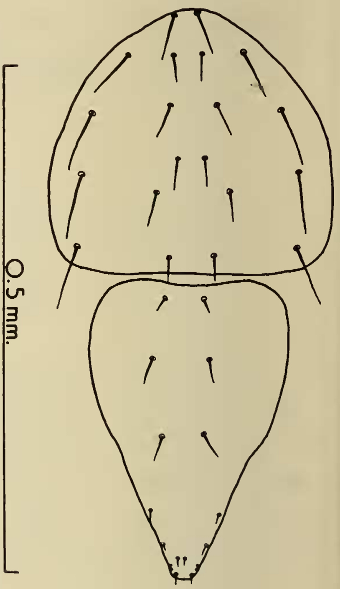

Fig. 2.
S. hipposideros n. sp.
Dorsal plates of female.

Steatonyssus hipposideros n. sp.

In the key given by Zumpt and Till (1954) to the Ethiopian *Steatonyssus* species, *S. hipposideros* keys out near *S. natalensis* Zumpt and Patterson, 1951, to which it bears a close resemblance. It can be distinguished from *S. natalensis* by its longer peritremes, and by the greater number of hairs on the ventral part of the opisthosoma. The genital setae are longer than in *S. natalensis*, reaching about half way to the tip of the genital plate, and the plate itself is bordered by four pairs of setae, whereas in *S. natalensis* it is bordered by two pairs. *S. hipposideros* is quite distinct from the other known Ethiopian species, namely *S. nyassae* (Hirst), *S. sudanensis* (Hirst), *S. eos* Zumpt and Till, and *S. brucei* Lavoipierre.

Female (Figs. 1-3): Body length without capitulum 640 μ in holotype, 595-620 μ in paratypes. Greatest body width (at level of spiracles) 360 μ in holotype, 315-350 μ in paratypes.

Venter: Sternal plate almost rectangular, concave posteriorly. Posterior third of plate very slightly thickened, the reticulations here being closer together than on the remaining part of the plate. There is no sharp demarcation between sternal plate and pre-sternal area. Median length of plate plus pre-sternal area 70 μ in holotype, 70-80 μ in paratypes; width at level of second pair of hairs 128 μ in holotype, 120-132 μ in paratypes. Sternal setae sub-equal in length. A pair of metasternal setae situated at level of coxae III are approximately the same length as the sternal setae.

Genital plate tapers to a rounded point and bears a pair of long setae. Its length from the level of the setae to the tip is 120 μ in the holotype, 120-132 μ in paratypes. Its width at the level of the setae is 62 μ in the holotype, 64-72 μ in the paratypes.

Anal plate pear-shaped, with a length of 120 μ in the holotype (120-128 μ in paratypes), and greatest width of 68 μ in the holotype (65-74 μ in paratypes). Paired anal hairs situated level with the posterior border of the anus.

The soft part of the venter bears about 38 pairs of hairs, excluding the long thick ones on the posterior margin. Stigma situated laterally between coxae III and IV, the peritreme extending to the anterior border of the second coxa.

Dorsum: The prosomal shield has a median length of 263 μ in the holotype (254-280 μ in paratypes), and greatest width of 265 μ in the holotype (245-280 μ in paratypes). It bears 10 pairs of setae. The opisthosomal shield is 306 μ long in the holotype (280-315 μ in paratypes) and has a greatest width of 200 μ in the holotype (184-200 μ in paratypes). It bears 7 pairs of setae. The soft part of the dorsum bears a number of long, slender setae.

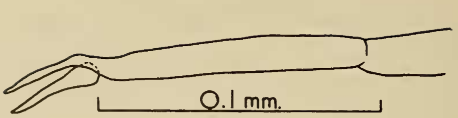

FIG. 3.
S. hipposideros n. sp.
Chelicera of female.

Gnathosoma: The first free palpal segment bears a spine on its ventral surface. The chelicerae have the structure indicated in Fig. 3.

Legs: The lengths of the segments are given (in μ) in the following table *:

Number of leg	Coxa	Trochanter	Femur	Genu	Tibia	Tarsus	Total
I	90	52	110	90	90	156	588
II . . .	50	56	80	70	66	110	432
III . . .	50	56	80	62	60	120	428
IV . . .	50	88	116	90	90	170	604

Male (Fig. 4): Body length without capitulum 480-490 μ; greatest width 265-280 μ.

Venter: Holoventral plate narrow with irregular margin, and bearing 19-21 hairs. Metasternal setae situated on soft skin at level of third pair of coxae. An additional 19-21 pairs of setae are situated on the soft part of the venter behind the fourth pair of legs. Peritreme extends to anterior third of second coxa. Metapodal plates present but variable in shape and number.

Dorsum: Dorsal plate entire, widest at level of third coxae, tapering gradually posteriorly; margin slightly irregular, anteriorly weakly sclerotized and ill-defined.

Gnathosoma: The first free palpal segment does not bear a spine on its ventral surface.

---

* The leg measurements have been made as follows:—
Coxa and trochanter: maximum length; all other segments: median length measured on dorsal surface.

Material: Holotype (♀), 11 ♀ and 4 ♂ paratypes (7 ♀ and 2 ♂ in the Muséum of Geneva), collected by Dr. V. Aellen, 14.VIII.53.

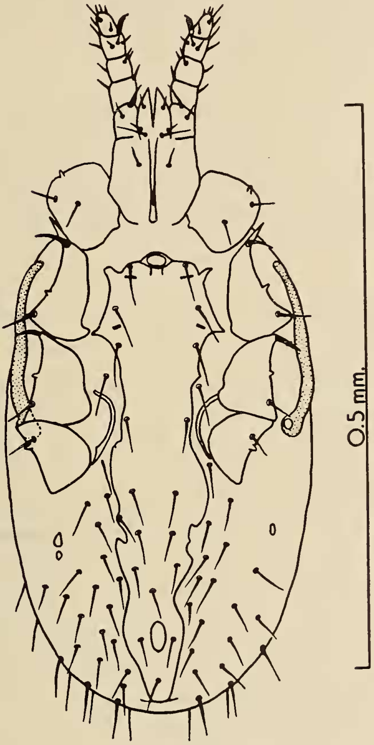

Fig. 4.
S. hipposideros n. sp.
Ventral surface of male.

Host: *Hipposideros cyclops* Temminck.
Locality: Yapo, Ivory Coast.

Metaspinolaelaps n. gen.

The species on which this new genus is based closely resembles *Neospinolaelaps miniopteri* Zumpt and Patterson, the only representative of the genus *Neospinolaelaps*. It differs from *N. miniopteri* in having a divided dorsal shield, a feature which is regarded as being of generic significance. In addition, the genital plate of the new species, *Metaspinolaelaps aelleni* bears 7-9 setae, whereas that of *N. miniopteri* bears only 5 setae. The peritremes of *M. aelleni* are much broader than those of *N. miniopteri.*

Type species: *Metaspinolaelaps aelleni* n. sp.

Metaspinolaelaps aelleni n. sp.

Female (Figs. 5-7): Body length without capitulum 370 μ in holotype, 385-410 μ in 9 paratypes; greatest width at level of spiracles, 245 μ in holotype, 230-254 in paratypes.

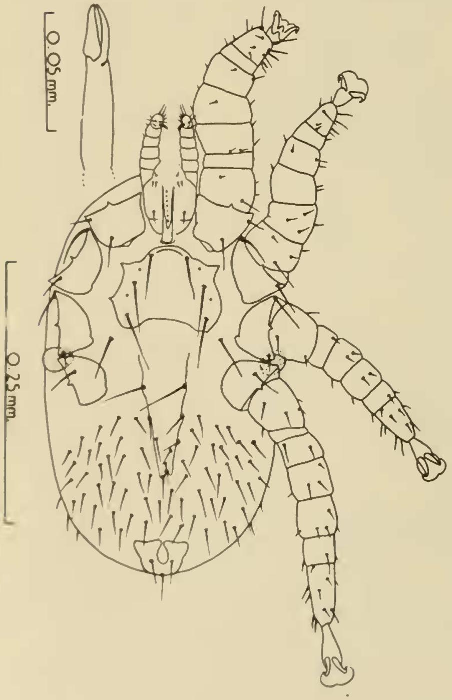

Fig. 5.
Metaspinolaelaps aelleni n. sp.
Ventral surface of female.

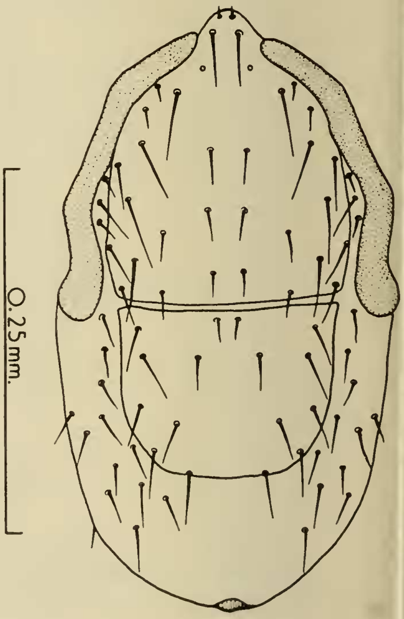

Fig. 6.
M. aelleni n. sp.
Dorsal surface of female.

Venter: Sternal plate convex anteriorly, concave posteriorly; median length 66 μ in holotype (60-74 μ in paratypes), width at level of 2nd pair of setae 94 μ in holotype (86-96 μ in paratypes), greatest width, i.e. between 2nd and 3rd pairs of setae, 110 μ in holotype (96-110 μ in paratypes). Sternal setae subequal in length, measuring about 55 μ. A pair of long metasternal setae are present, but there is no metasternal plate.

Genital plate 46 μ wide (44-48 μ in paratypes) at level of first pair of genital setae, tapering posteriorly, but posterior margin very indistinct. First pair of setae long (50 μ). In addition, the genital plate bears 5 to 7 shorter setae.

Anal plate broad, interrupted anterior to the anus, and bearing the usual 3 setae. Greatest width of plate 62 μ in holotype (56-62 μ in paratypes).

The soft part of the venter behind the 4th pair of legs bears numerous setae (approximately 30 pairs). The spiracles open laterally between coxae III and IV. The peritremes are very broad and extend along the dorsolateral margin to a point level with the anterior margin of the first pair of coxae.

Dorsum: The dorsal plate is divided transversely into a larger anterior and a smaller posterior portion. The anterior or podosomal plate has a conical anterior tip. Its posterior border is straight and is level with the space between coxae III and IV. The plate has a median length of 205 μ in the holotype (193-210 μ in paratypes), greatest width of 184 μ (180-193 μ in paratypes), and bears 17 pairs of setae arranged as illustrated in Figure 6.

The opisthosomal plate is almost rectangular in shape with rounded posterior corners. It has a median length of 120 μ in the holotype (122-130 μ in paratypes), and greatest width, at anterior margin, of 150 μ (150-158 μ in paratypes). It bears 8 pairs of setae. The soft part of the dorsum lateral and postero-lateral to the opisthosomal plate bears about 12 pairs of setae.

Gnathosoma: The ventral surface bears 7 or 8 teeth arranged in a single vertical row, and 4 pairs of setae. The palpi consist of 5 free segments. The chelae do not bear teeth.

Legs: The first pair of legs are much stouter than the remaining ones. The dorsal surface of the femur bears apically a pair of long, thick bristles (Fig. 7) measuring approximately 50 μ in length. Femur II bears 3 thick dorsal bristles, of which the outer two are 45-50 μ long, and the inner are about 30 μ long, and

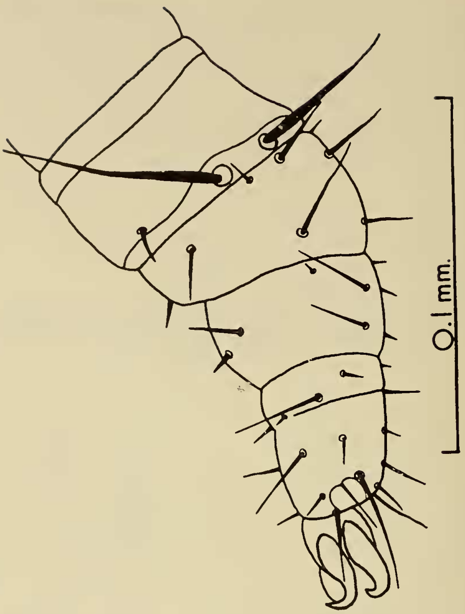

FIG. 7.
M. aelleni n. sp.
Dorsal view of leg I.

femur IV bears a 35 μ bristle. The measurements of the legs are given in the following table (in μ):

Number of leg	Coxa	Tro-chanter	Femur	Genu	Tibia	Tarsus	Total	Width of Femur
I . . .	50	40	46	34	30	42	242	64
II . .	40	30	40	36	28	44	218	50
III . .	40	30	30	28	26	60	214	42
IV . .	32	50	44	36	40	90	292	40

Male: Body length without capitulum 345 μ, greatest width 210 μ.

The sterno-genital plate extends a little beyond the mid-point of the 4th pair of coxae, and bears four pairs of setae. Metasternal seta situated on soft skin lateral to sterno-genital plate, at level of posterior border of 3rd coxa. Anal plate similar to that of female. Soft part of venter behind 4th pair of legs bears about 30 pairs of setae. Peritremes, dorsal plates and legs as in the female.

Material: Holotype (♀), 2 ♂ and 11 ♀ paratypes collected by the Virus Research team of the Rockefeller Foundation, 27.IV.55.

Host: *Nycteris thebaica capensis* A. Smith, the Cape Slit-faced bat.

Locality: Between Tete Pan and the Pongola River, Ubombo district, Zululand.

The species is named in honour of Dr. V. Aellen, Geneva, to whom 1 ♂ and 2 ♀ paratypes have been presented. (Muséum of Geneva.)

Genus Periglischrus Kolenati, 1857.

This genus has recently been studied by Tibbetts (1957), who has given a key to the known species of the world.

Only one Ethiopian species has been described up to now, namely *P. africanus* Zumpt (1950). The three new species described in the present paper closely resemble *P. africanus*, and in all four species the dorsal plate is reduced to a number of very small, indistinct platelets. In this respect the Ethiopian species differ from the known non-Ethiopian species, in which the dorsal plate is either entire, or divided into a comparatively large anterior and a smaller posterior plate.

The Ethiopian species may be separated according to the following key.

KEY TO THE ETHIOPIAN SPECIES OF THE GENUS PERIGLISCHRUS

(Females)

1 (2) Median dorsal hair on femur I very long (150 μ), more than 1½ times width of femur.

Median dorsal hair on femur I five times as long as inner dorsal hair, and 3 times as long as median dorsal hair on genu I (Fig. 8). — Zululand, from *Nycteris thebaica capensis* A. Smith. 1. *zuluensis* n. sp.

2 (1) Median dorsal hair on femur I less than 1½ times width of femur 3

3 (6) Median dorsal hair on femur I longer than width of femur 4

4 (5) Chelicerae relatively small, measuring 93 μ from base of chelae to base of shaft. All sternal setae on soft skin. Genital plate relatively slender. A pair of large sclerotized areas on venter of engorged females (Fig. 10). — Cameroons, from *Hipposideros caffer guineensis* Andersen.
2. *moucheti* n. sp.

5 (4) Chelicerae larger, measuring 116 μ from base of chelae to base of shaft. First two pairs of sternal setae situated on margin of plate. Genital plate relatively broad. No sclerotized areas on venter (Fig. 12). — Ivory Coast, from *Nycteris arge* Thomas. 3. *nycteris* n. sp.

6 (3) Median dorsal hair on femur I not longer than width of femur (Fig. 15). — Transvaal and Natal, from *Rhinolophus clivosus* Cretzschmar.
4. *africanus* Zumpt (1950).

1. *Periglischrus zuluensis* n. sp.

Female (Fig. 8): Body length, excluding gnathosoma, 744 μ in holotype, 665-760 μ in paratypes; body width at level of spiracles 403 μ in holotype, 403-480 μ in paratypes; greatest width, between legs II and III, 480 μ in holotype, 500-508 μ in paratypes.

Venter: Sternal plate reduced, irregular in outline. Sternal setae extremely minute, first pair placed on anterior margin of plate, second and third pairs on soft skin, sternal pores not distinguishable. Metasternal setae lateral and slightly anterior to genital opening. Genital plate very weakly sclerotized, one pair of minute setae on soft skin near its postero-lateral border. Crescent-shaped area of chitinization posterior to anus, one pair of setae anterior to anus. One pair of circular structures resembling bases of setae distinguishable on remaining part of venter, about mid way between coxae IV and posterior margin of body.

Dorsum: Dorsal plate greatly reduced, represented by eleven or twelve small platelets. Thirteen pairs of minute setae can be distinguished on the soft skin of the dorsum. Stigma situated laterally between coxae III and IV, peritreme short, not reaching middle of coxa III.

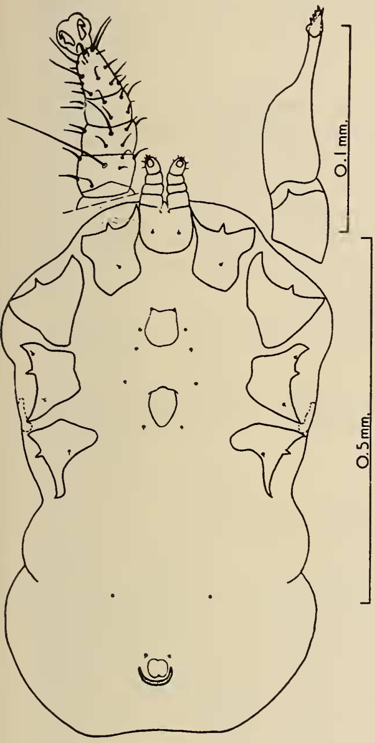

Fig. 8.
Periglischrus zuluensis n. sp.
Ventral surface and chelicera of female; dorsal surface of leg I.

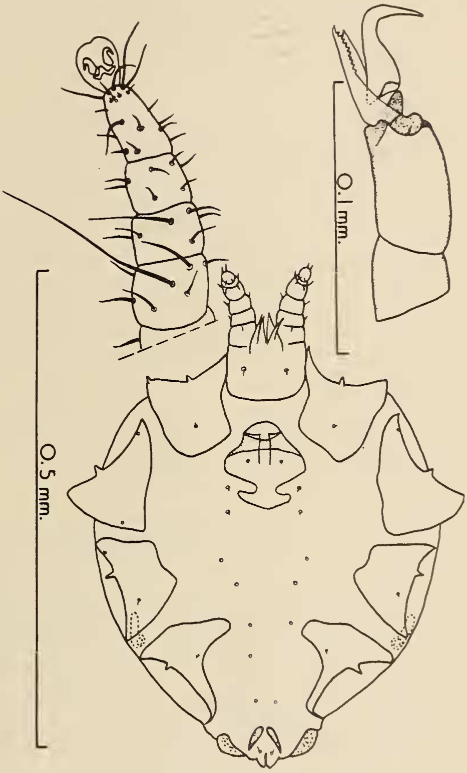

Fig. 9.
P. zuluensis n. sp.
Ventral surface and chelicera of male.

Legs: Short and stout. Chaetotaxy of dorsal surface of first leg shown in Fig. 8. Median dorsal hair on femur I extremely long (150 μ), nearly twice the width of the femur (80 μ) and about 3 times as long as the median dorsal hair (50 μ) on genu I.

Gnathosoma: As in *P. nycteris*. Chelicera shown in Fig. 8.

Male (Fig. 9): Body length excluding gnathosoma, 438-455 μ, greatest width 350-385 μ.

Venter: Sternal plate as figured, sometimes more reduced. Three pairs of minute sternal setae present. Five pairs of minute setae on metapodosomal region of venter, one pair of setae in front of anus.

Dorsum: Twelve weakly sclerotized platelets as in the female. Spiracles between coxae III and IV. Peritremes as in female.

Legs: Chaetotaxy of dorsal surface of leg I shown in Fig. 9. Median dorsal hair of femur I extremely long, more than twice as long as median dorsal hair of genu I.

Material: Holotype (♀), 10 ♂ and 26 ♀ paratypes collected by the Rockefeller Foundation Virus Research Team, 27.IV.55. The material also includes 6 nymphs, not included in the type series. Paratypes in the Muséum of Geneva.

Host: *Nycteris thebaica capensis* A. Smith, the Cape Slit-faced Bat.

Locality: Between Tete Pan and the Pongola River, Ubombo district, Zululand.

2. *Periglischrus moucheti* n. sp.

Female (Fig. 10): Body length excluding gnathosoma 726 μ in holotype 674-683 μ in paratypes; width at level of spiracle 410 μ in holotype, 376-410 μ in paratypes; greatest width (between legs II and III) 480 μ in holotype, 438-480 μ in paratypes. Non-distended specimens are about 560-570 μ long and 350 μ wide.

Venter: Sternal plate reduced, three pairs of minute sternal setae all situated on soft skin. Metasternal setae level with anterior border of genital plate. Genital plate about 60 μ long in holotype, slender, with a pair of minute setae on the soft skin near its posterior tip. Five additional pairs of setae can be distinguished on the venter including one pair, slightly longer than the others, and placed in front of the anus.

A pair of sclerotized areas are present on the posterior part of the venter, antero-lateral to the anus. These areas are variable in their size and shape. In the majority of the specimens examined (69 out of 79) they have approximately the size and form of those indicated in the drawing; in one specimen the areas are reduced to about half this size and are more weakly sclerotized; in 9 specimens, all of which are either not, or only partially distended, the areas are absent. In all other respects, the mites without the sclerotized areas are indistinguishable from the mites with sclerotized areas.

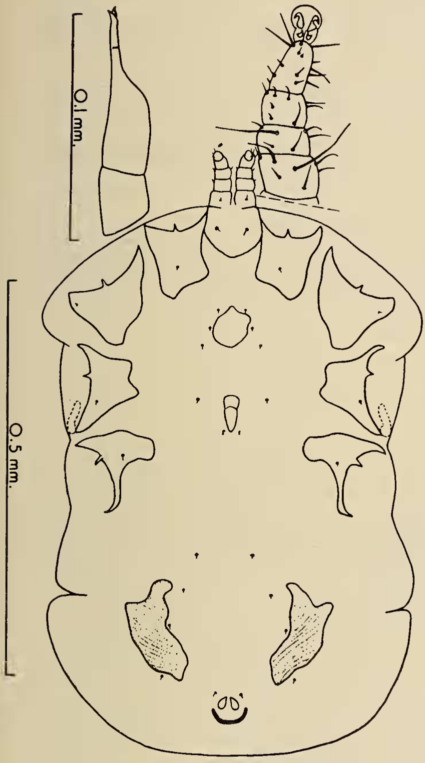

FIG. 10.
Periglischrus moucheti n. sp.
Ventral surface and chelicera of female; dorsal surface of leg I.

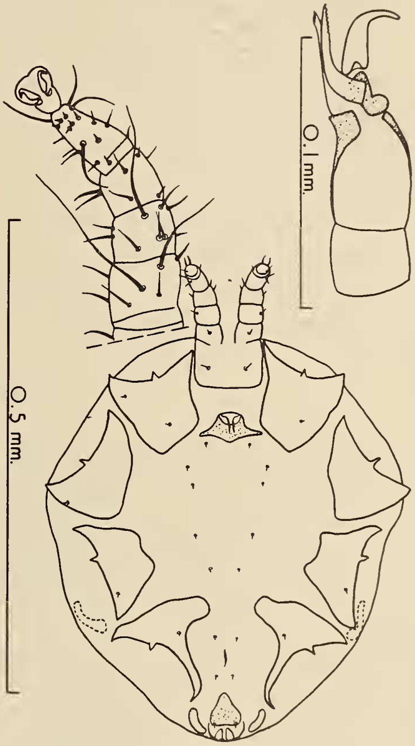

FIG. 11.
P. moucheti n. sp.
Ventral surface and chelicera of male.

It is possible that these areas develop only after the mites start to feed.

Dorsum: The dorsal plate is represented by 10 small, weakly sclerotized platelets. The plates opposite coxae III are only partially divided into two parts by a still more weakly sclerotized band. Stigma dorsal, situated between coxae III and IV; peritreme dorsal, about 46 μ long, 8 μ wide. Eleven pairs of minute setae are distinguishable on the median part of the dorsum.

Laterally, five pairs of longer setae are present, two over coxae I, two over coxae II and one at the level of the stigmata.

Legs: Short and stout; chaetotaxy of dorsal surface of leg I shown in Fig. 10. Median dorsal hair on femur about 90 μ long, width of femur 70 μ, inner dorsal hair 48 μ long. Median dorsal hair on genu 70 μ long.

Gnathosoma: As in *P. nycteris* and *P. zuluensis*. Chelicera shown in Fig. 10.

Male (Fig. 11): Body length excluding gnathosoma 394-430 μ, greatest width 350-400 μ.

Venter: Sternal plate and chaetotaxy as shown in the figure. In front of the anus there is a triangular anal plate with a pair of minute setae on its posterior border. A pair of wing-like, sclerotized areas lie lateral to the anus.

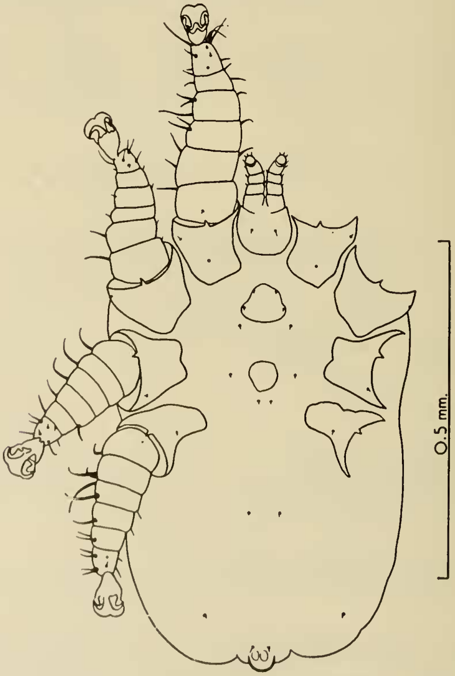

FIG. 12.
Periglischrus nycteris n. sp.
Ventral surface of female.

Dorsum: Dorsal plate divided into eleven small platelets. Eleven pairs of minute setae on median part of dorsum and five longer lateral pairs all distributed as in the female. Stigma and peritreme dorsal, stigma lying between coxae III and IV.

Legs: Chaetotaxy of dorsal surface of leg I shown in Fig. 11. Median dorsal hair of femur 170 μ long, inner dorsal hair 96 μ long, median dorsal hair on genu 120 μ long.

Gnathosoma: Chelicera shown in Fig. 11.

Material: Holotype (1 ♀), 78 ♀ paratypes, 24 ♂ paratypes, collected by Dr. J. Mouchet, 12.IV.55. Twenty-two nymphs are present, which are not included in the type series. Paratypes in the Muséum of Geneva.

Host: *Hipposideros caffer guineensis* Andersen, the Lesser Leafnosed Bat.

Locality: Yaoundé, Cameroons.

3. *Periglischrus nycteris* n. sp.

Female (Figs. 12-14): Body length, excluding gnathosoma, 710 μ in holotype, 700-726 μ in paratypes; width at level of spiracles 464 μ in holotype, 410-438 μ in paratypes; greatest width (between legs II and III) 508 μ in holotype, 473-508 μ in paratypes.

Venter: Sternal plate very weakly sclerotized, first and second pairs of setae situated on margin of plate, 3rd pair of setae on soft skin posterior to plate. Metasternal setae slightly posterior to genital opening. Genital plate reduced, one pair of minute setae on soft skin posterior to plate. Two pairs of minute setae on opisthosoma, a third longer pair in front of anus. There is a semicircular, chitinous area posterior to the anus.

Dorsum: Dorsal plate represented by twelve small, weakly sclerotized platelets. Stigma situated between coxae III and IV, peritreme short, measuring about 50 μ in length. Thirteen pairs of minute setae, or their footprints, visible on dorsum.

Legs: Short and stout; chaetotaxy of dorsal surface of leg I shown in Fig. 13. Median dorsal hair on femur I about 120 μ long, width of femur 100 μ; inner dorsal hair about 70 μ long. Median dorsal hair on genu 110 μ long.

Gnathosoma: The chaetotaxy of the ventral surface of the gnathosoma and a lateral view of one chelicera are shown in Fig. 14.

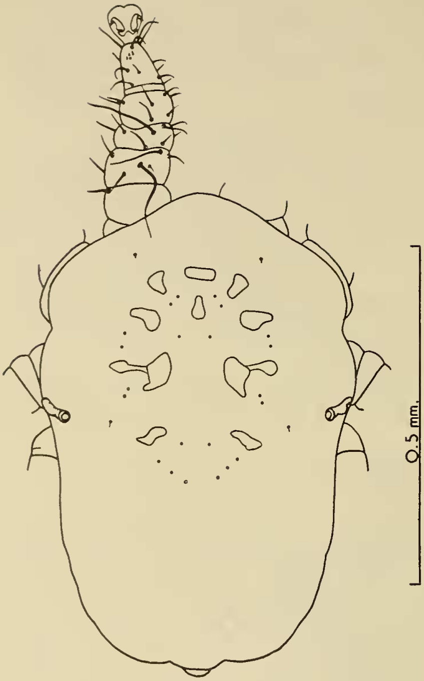

FIG. 13.
P. nycteris n. sp.
Dorsal surface of female.

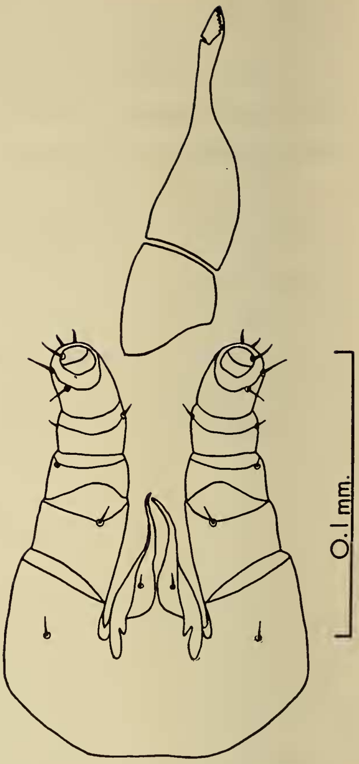

FIG. 14.
P. nycteris n. s.p
Gnathosoma and chelicera of female.

Material: Holotype (♀) and 4 female paratypes, collected by Dr. V. AELLEN, 16. VII. 53. 2 ♀ paratypes in the Muséum of Geneva.

Host: *Nycteris arge* Thomas.

Locality: Banco Forest, Ivory Coast.

4. *Periglischrus africanus* Zumpt.

ZUMPT (1950, fig. 4) described this species as having three indistinct, weakly sclerotized dorsal platelets. Re-examination of the type series and of additional material reveals that in the female there are actually twelve small, irregularly shaped and very weakly sclerotized platelets (Fig. 15).

The femur and genu of the first pair of legs each bear a long hair on the median, anterior part of the dorsal surface. The hair on the femur is slightly longer than that on the genu, and a little shorter than the width of the femur.

The number of platelets on the dorsum of the male cannot be determined with certainty.

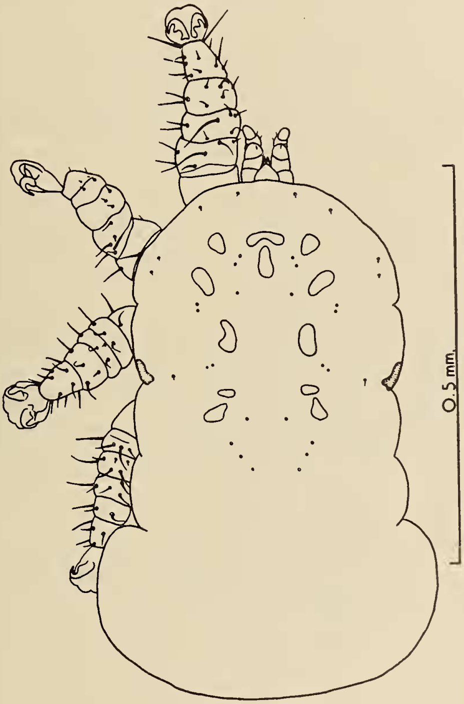

Fig. 15.
P. africanus Zumpt.
Dorsal surface of female.

P. africanus is known only from the type host, *Rhinolophus clivosus* Cretzschmar, Geoffroy's Horseshoe Bat. It has been collected in several localities in S. Afrika, namely in the Sterkfontein and Makapan Caves, and near Potchefstroom, all in the Transvaal, and near Pietermaritzburg, Natal.

REFERENCES

Clark, G. M. and C. E. Yunker. 1956. *A new genus and species of Dermanyssidae (Acarina: Mesostigmata) from the English Sparrow, with observations on its life cycle.* Proc. Helminth. Soc. Washington. 23: 93.

Hirst, S. 1922. *On some new parasitic mites.* Proc. zool. Soc. Lond., p. 769.

— 1926. *Descriptions of new mites, including four new species of "Red Spider".* Proc. zool. Soc. Lond., p. 825.

Lavoipierre, M. M. J. 1956. *A description of a new genus and of three new species of mites (Acarina, Parasitiformes) parasitic on West African mammals.* Ann. Trop. Med. Parasit. 50: 291.

Tibbetts, T. 1957. *Description of a new Periglischrus from a bat, Mormoops megalophylla senicula Rehn, together with a key to the species of Periglischrus (Acarina, Spinturnicidae).* J. Kansas Ent. Soc. 30: 13.

Zumpt, F. 1950. *Ectoparasites of bats from the Sterkfontein caves, Transvaal.* J. ent. Soc. S. Afr. 13: 87.

— and P. M. Patterson. 1951. *Further notes on Laelaptid mites parasitic on vertebrates. A Preliminary study to the Ethiopian fauna.* J. ent. Soc. S. Afr. 14: 63.

— and P. M. Patterson. 1952. *Three new parasitic mites from the Ethiopian region (Acarina: Laelaptidae).* J. ent. Soc. S. Afr. 15: 159.

— and W. Till. 1954. *The Genus Steatonyssus Kolenati in the Ethiopian region (Acarina: Laelaptidae).* J. ent. Soc. S. Afr. 17: 47.